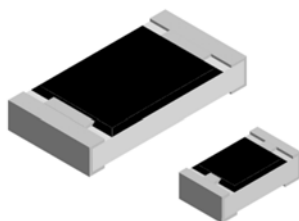


# Thick Film Surface Mount Chip Resistors, Wraparound, Extremely Low Value (0.01 $\Omega$ to 0.976 $\Omega$ )



## FEATURES

- Extremely low resistance values (0.01  $\Omega$  to 0.976  $\Omega$ )
- Suitable for current sensing and shunts
- Metal glaze on high quality ceramic
- Protective overglaze
- Lead (Pb)-free solder contacts on Ni barrier layer
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

**HALOGEN**  
**FREE**

| STANDARD ELECTRICAL SPECIFICATIONS |           |                                               |                                                          |                              |                              |                         |
|------------------------------------|-----------|-----------------------------------------------|----------------------------------------------------------|------------------------------|------------------------------|-------------------------|
| GLOBAL MODEL                       | CASE SIZE | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | TEMPERATURE COEFFICIENT<br>$\pm$ ppm/ $^{\circ}\text{C}$ | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm$ %         | E-SERIES <sup>(2)</sup> |
| RCWH0805                           | 0805      | 0.33                                          | 400                                                      | 0.010 to 0.018               | 5.0                          | 24                      |
|                                    |           |                                               | 300                                                      | 0.02 to 0.03                 | 1.0, 5.0                     | 24; 96                  |
|                                    |           |                                               | 200                                                      | 0.033 to 0.05                | 1.0, 5.0                     |                         |
|                                    |           |                                               | 100                                                      | 0.051 to 0.976               | 0.5, 1.0, 5.0 <sup>(1)</sup> |                         |

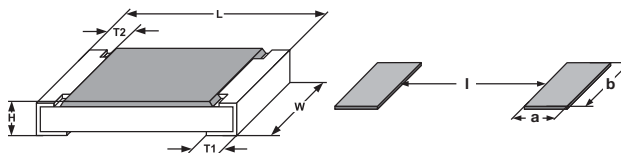
## Notes

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.
- Part marking: reference "Surface Mount Resistor Marking" ([www.vishay.com/doc?20020](http://www.vishay.com/doc?20020)).
- <sup>(1)</sup> Tight tolerance of 0.5 % is available for resistance values above 0.200  $\Omega$ .
- <sup>(2)</sup> Use E24 decade values for 5.0 % tolerance parts and E96 decade values for 0.5 % and 1.0 %. Refer to "Standard Decade" table ([www.vishay.com/doc?31001](http://www.vishay.com/doc?31001)).

| GLOBAL PART NUMBER INFORMATION                                                                                                                                |   |   |   |                                                                                                                                                                  |   |   |   |                                                                              |   |                                                                                                                                                                                                                                                                                                                                |   |                                           |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------|-------|
| Global Part Numbering example: RCWH0805R499FKEA (visit <a href="http://www.vishay.net">www.vishay.net</a> Vishay Dale parts numbering manual for all options) |   |   |   |                                                                                                                                                                  |   |   |   |                                                                              |   |                                                                                                                                                                                                                                                                                                                                |   |                                           |       |
| R                                                                                                                                                             | C | W | H | 0                                                                                                                                                                | 8 | 0 | 5 | R                                                                            | 4 | 9                                                                                                                                                                                                                                                                                                                              | 9 | F                                         | K E A |
| GLOBAL MODEL<br>(8 digits)                                                                                                                                    |   |   |   | VALUE<br>(4 digits)                                                                                                                                              |   |   |   | TOLERANCE<br>(1 digit)                                                       |   | TCR<br>(1 digit)                                                                                                                                                                                                                                                                                                               |   | PACKAGING<br>(2 digits)                   |       |
| RCWH0805                                                                                                                                                      |   |   |   | $L = \text{m}\Omega$ *<br>$R = \text{decimal}$<br>$10L0 = 0.01 \Omega$<br>$R470 = 0.47 \Omega$<br><b>Note:</b><br>* Use "L" for resistance values < 0.1 $\Omega$ |   |   |   | $D = \pm 0.5 \%$<br>$F = \pm 1.0 \%$<br>$G = \pm 2.0 \%$<br>$J = \pm 5.0 \%$ |   | $K = \pm 100 \text{ ppm}/^{\circ}\text{C}$<br>$N = \pm 200 \text{ ppm}/^{\circ}\text{C}$<br>$M = \pm 300 \text{ ppm}/^{\circ}\text{C}$<br>$Q = \pm 400 \text{ ppm}/^{\circ}\text{C}$<br>$P = \pm 500 \text{ ppm}/^{\circ}\text{C}$<br>$T = \pm 600 \text{ ppm}/^{\circ}\text{C}$<br>$G = \pm 700 \text{ ppm}/^{\circ}\text{C}$ |   | $EA = \text{lead (Pb)-free, tape / reel}$ |       |

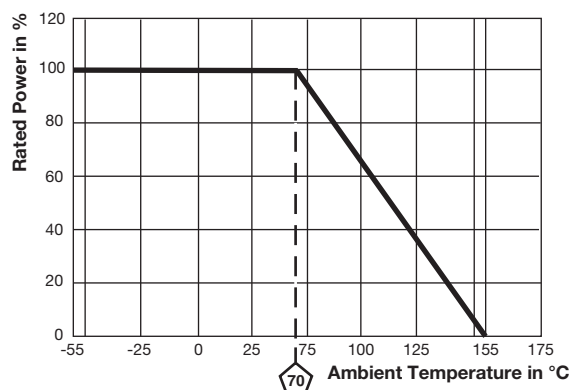
| TECHNICAL SPECIFICATIONS                    |                    |                      |
|---------------------------------------------|--------------------|----------------------|
| PARAMETER                                   | UNIT               | RCWH0805             |
| Operating temperature range                 | $^{\circ}\text{C}$ | -55 to +155          |
| Maximum operating voltage                   | V                  | $(P \times R)^{1/2}$ |
| Insulation voltage $U_{\text{ins}}$ (1 min) | V                  | > 200                |
| Insulation resistance                       | $\Omega$           | > $10^9$             |
| Weight/1000 pieces (typical)                | g                  | 5.5                  |

## DIMENSIONS

**RCWH0805**


| MODEL    | DIMENSIONS in millimeters |                |               |                |               |                | SOLDER PAD DIMENSIONS in millimeters |     |     |
|----------|---------------------------|----------------|---------------|----------------|---------------|----------------|--------------------------------------|-----|-----|
|          | RESISTANCE RANGE $\Omega$ | L              | W             | H              | T1            | T2             | a                                    | b   | l   |
| RCWH0805 | 0.01 to 0.03              | $2.0 \pm 0.15$ | $1.3 \pm 0.1$ | $0.55 \pm 0.1$ | $0.6 \pm 0.2$ | $0.35 \pm 0.2$ | 1.0                                  | 1.4 | 0.6 |
|          | 0.033 to 0.976            |                |               |                | $0.4 \pm 0.2$ |                | 0.8                                  | 1.4 | 1.0 |

## DERATING



## PERFORMANCE

| TEST                      | CONDITIONS OF TEST                                                                | TEST LIMITS                    |
|---------------------------|-----------------------------------------------------------------------------------|--------------------------------|
| Thermal shock             | MIL-STD-202, method 107, -55 °C to +125 °C, 300 cycles at each extreme            | $\pm (1.0 \% + 0.0005 \Omega)$ |
| Short time overload       | 2 x rated power; duration according the model                                     | $\pm (0.5 \% + 0.0005 \Omega)$ |
| High temperature exposure | MIL-STD-202, method 108, 1000 h at T = 125 °C, 0 % power                          | $\pm (2.0 \% + 0.0005 \Omega)$ |
| Temperature cycling       | JESD 22, method JA-104, 1000 cycles (-55 °C to +125 °C)                           | $\pm (2.0 \% + 0.0005 \Omega)$ |
| Biased humidity           | MIL-STD-202, method 103, 1000 h 85 °C/85 % RH, 10 % x $(P \times R)^{1/2}$        | $\pm (2.0 \% + 0.0005 \Omega)$ |
| Mechanical shock          | MIL-STD-202, method 213, condition C, 10 g's, 6 ms (half sine), 3 directions      | $\pm (1.0 \% + 0.0005 \Omega)$ |
| Vibration                 | MIL-STD-202, method 204, 5 g's, 20 min, 12 cycles, 3 directions, 10 Hz to 2000 Hz | $\pm (1.0 \% + 0.0005 \Omega)$ |
| Operational life          | MIL-STD-202, method 108, 1000 h at T = 125 °C at rated power                      | $\pm (2.0 \% + 0.0005 \Omega)$ |
| Resistance to solder heat | MIL-STD-202, method 210, +260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence    | $\pm (1.0 \% + 0.0005 \Omega)$ |
| Moisture resistance       | MIL-STD-202, method 106, 0 % power, 7a and 7b not required                        | $\pm (2.0 \% + 0.0005 \Omega)$ |

## PACKAGING

| MODEL    | REEL               |           |       |             |      |
|----------|--------------------|-----------|-------|-------------|------|
|          | TAPE WIDTH         | DIAMETER  | PITCH | PIECES/REEL | CODE |
| RCWH0805 | 8 mm/punched paper | 180 mm/7" | 4 mm  | 5000        | EA   |

### Note

- Embossed carrier tape per EIA-481-1A.



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